Programmable Logic Controller learning With EasyVeep

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Abstract:
EasyVeep is a program used for Programmable Logic Controller (PLC) simulation. Using EasyVeep students can visualize and solve problems involving PLC and automation programming. EasyVeep help students to get broad view of working environment and able students to understand problems and solution approach more clearly by animation screens. EasyVeep tool give PLC a more approachable programming logic and a very effective teaching method implemented by many engineering schools in PLC and automation labs. In this poster, we present how EasyVeep helps students improve learning experiences about industrial process, automation and how it helps them understand PLC programming better.

Introduction:

EasyVeep is software developed to make Programmable Logic Controller (PLC) more approachable for students. PLC is miniature computer that has been programmed for the use in industrial applications. Many PLCs can be used in a single system allowing for multiple inputs and outputs if necessary, this technology allowed us to develop new manufacturing processes and improve on the pre-existing ones. Although PLC is an important technology, it is very difficult to be implemented in many schools and some universities due to the fact that PLCs are expensive. EasyVeep allows schools to use a small amount of PLCs and use the 2D simulation that is provided by the software to simulate many problems that students could face in the industry. This allows students to gain broader knowledge of PLCs while keeping the cost to a minimum for the school. As a student, EasyVeep has personally helped me learn more about PLCs due to the fact that it was implanted in the lecture and part of many assignments. PLC is an important programming skill that many engineers need to learn because it prepares them for the industry and many of the problems they might face in the work environment, EasyVeep helps breach the gap between industry and education.

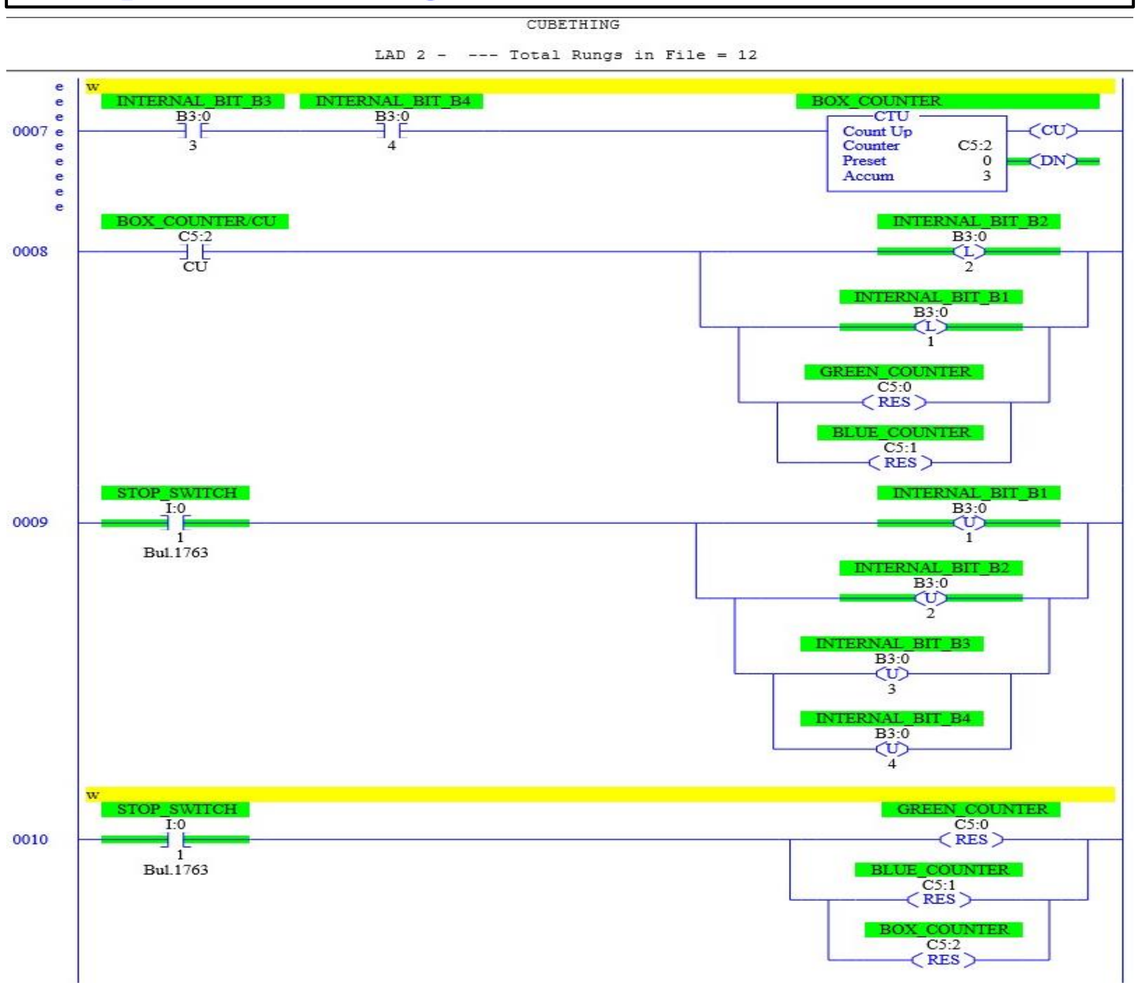
EasyVeep:

This software used 2D simulation to help students visualize many problems that could be solved using PLC. These modules differ to cover a very wide range of issues that could be faced in the industry and this variety also helps to keep students engaged. These modules also have a difficulty meter to help differentiate which modules should be used for teaching starting students, and which should be used for more advanced students. The module we are looking at is the counter module which is which is used to teach students how counters could be implemented and how they can be used.

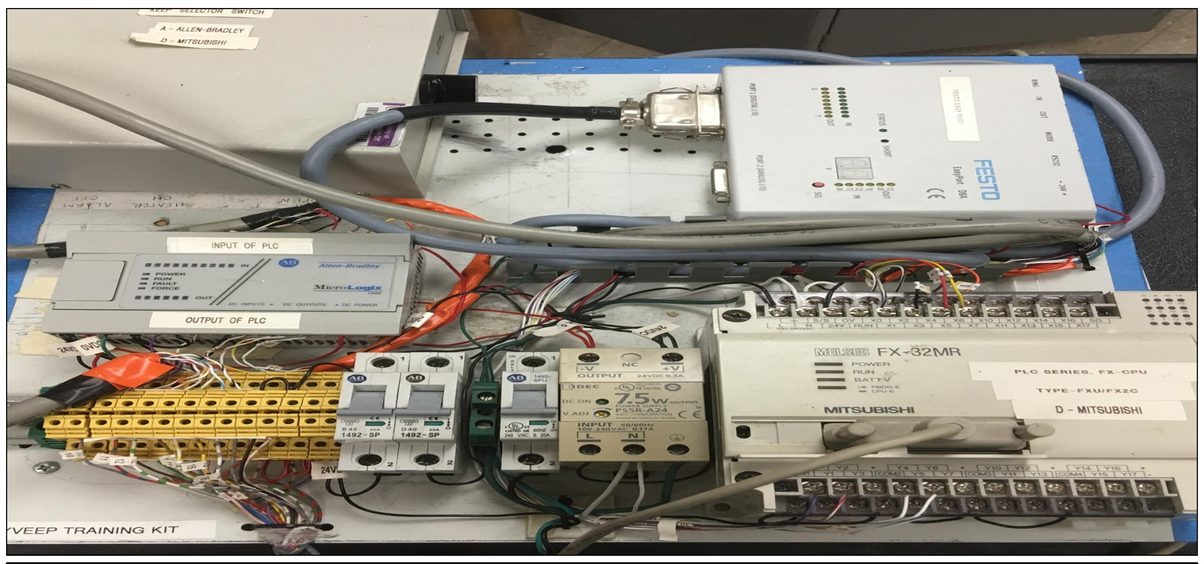
Programmable Logic Controller:

Many manufacturing facilities use PLCs to automate the operation, this allows for better products and more efficient productions. PLC programming is used to program any machine that uses PLC; this allows us to set the inputs, outputs and the operations of the machine. PLC also has many different languages because there are multiple different companies that produce their own PLC to be used in the industry; an example is Mitsubishi and Allen Bradley. Although there are different languages and different software used for each language, the logic behind programming PLCs stays the same.

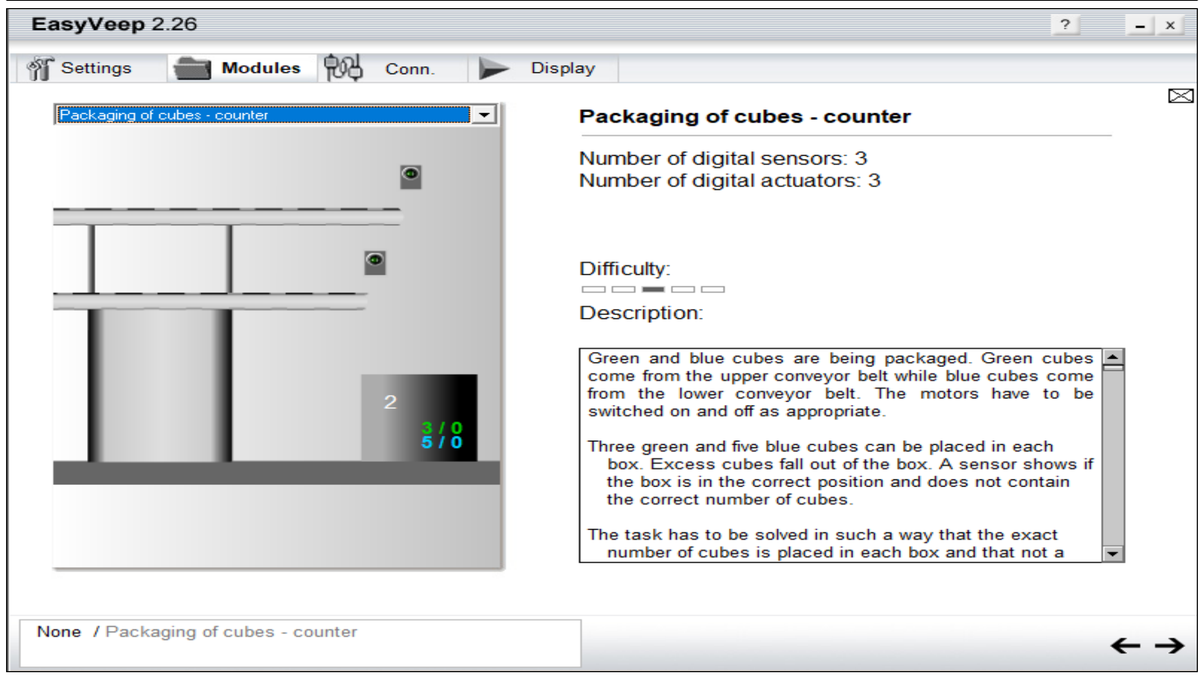
Example of Ladder Logic



EasyVeep Hardware Setup



EasyVeep Software



Applications of PLC:

There are many applications in many different fields for PLC, some of which are:

- Manufacturing Industry
- Food Industry
- Medical Industry
- Aerospace
- Chemical Industry
- Printing Industry

Hardware:

For this project we used a simple hardware setup, which is similar to any common PLC setup used in the industry. The parts for this project included:

- Mircologix 1000
- FESTO EasyPort
- Keep Selector Switch
- Power source

Conclusion and Future Aspects:

EasyVeep helped many students become better PLC programmers by introducing them to many different situations that require great understanding of PLC programming to solve. This software helped bring industry experience to students, which allows them to gain unique knowledge that could not be gained in class. PLC programming is also an important skill that many students need to learn because it's a valuable skill that many employers look for. Also as shown above we can see how EasyVeep can help students learn how to do PLC programming, the counter module helped me write the ladder logic needed to solve the simulated problem given from EasyVeep.

References:

- FESTO EasyVeep Manual
- Allen-Bradley Manual